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ABSTRACT

This study describes a school-university collaboration involving a number of professional development schools in Israel and examines the efficacy of such collaborations. A government agency requested that a university researcher plan and implement collaborative programs. The program determined to include a heterogeneous group of schools, selected in part with the help of district superintendents and where at least 80 percent of teachers expressed interest in the program. The final list of participants consisted of 10 elementary schools with 120 teachers teaching about 3,000 students. The project's focus on pupils' academic achievement was intended to relieve teachers from feeling that they were not good enough. Professional development included workshops on assessing pupil achievement, heterogenous groups, and other topics dictated in part by teacher input. The program included lectures at the university, weekly workshops held at the school during school hours, and teacher observations. Principals attended workshops which focused on supporting teachers' work and on principals' professional development. The program included planning for perpetuation and continuation in part by preparing teachers to become workshop and educational leaders. All project activities were documented by audio-taped interviews which were later transcribed and workshop documentation. Project evaluation in an action research approach covered the nature of the collaboration, professional development of participants, and pupil academic achievement. Contains 23 references. (JB)

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SCHOOL-UNIVERSITY COLLABORATION: ITS EFFICACY IN PROFESSIONAL DEVELOPMENT SCHOOLS

Abstract

The study discusses school-university collaboration as a tool for improving educational practices. Following a review of the relevant literature on this topic, the study then presents a case study of a project that involved professional development schools carried out via school-university collaboration. While focussing on the elements of the project - initiation, entry negotiations, implementation and evaluation - the study analyzes the characteristics of this and most other school-university projects, as well as the idiosyncratic features of the project under study. The latter are then elaborated upon, discussed and proposed for consideration in planning and implementing future projects of school-university collaboration.

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SCHOOL-UNIVERSITY COLLABORATION:
ITS EFFICACY IN PROFESSIONAL DEVELOPMENT SCHOOLS

INTRODUCTION

This study discusses school-university collaboration as a tool for improving educational practices and enriching educational theories. Starting with a description of the background against which such a collaboration grew and continuing with a brief review of the literature on this topic, the study then focuses on a project involving professional development schools that was carried out through a school-university collaboration venture.

BACKGROUND

The Israeli scene

The point of departure was the societal calls for teacher accountability, including the strong demand for raising the level of pupils' academic achievement. In Israel this call is characterized by an element of idiosyncracy because of the local characteristics, among which is the tremendous range of cultural differences in a relatively small population (4,500,000 citizens), with citizens coming from all five continents, speaking about 80 language dialects. Perhaps highlighting this issue is the recent phenomenon of a rapid and ongoing influx of immigrants from two extremely different cultures, Russia and Ethiopia. This phenomenon puts an additional burden on teachers, who have never experienced such a situation. The general need to raise the academic achievement of pupils thus becomes more complicated and

necessitates urgent professional development at the level of both individual teacher and the whole school.

General perspective

The ever-growing complexity of teaching and education and the societal call for teacher accountability demand a high level of pedagogical knowledge. Although this knowledge is in a constant process of growth, it is not put into practice as it should be. This situation calls for the mobilization of the energy of all potential contributors, who can help both in implementing the already-existing pedagogical knowledge and in developing and enriching this knowledge. This need immediately turns the light on educational theorists and practitioners alike.

These two groups of professionals, however, work in different milieus, the cultural gap between them resulting in difficulties in communication and in making the link between theory and practice. School-university collaboration in professional development schools may well create a bridge over this gap, to the benefit of both theorists and practitioners.

What do we know about professional development schools and about school-university collaboration? A review of the literature may provide some answers to this question.

Literature review

The literature reveals a relatively large number of reports on school-university collaboration and on the professional development schools (Sirotnik and Goodlad, 1988;

Chamberlin and Wallace, 1991; Smith, 1992; Stoddart 1993; Peel and Walker, 1993; to mention just a few). These studies revolve around several main axes:

1. Needs and goals of school-university collaboration;

2. Initiation and processes of implementation;

3. Benefits and obstacles.

Following is a brief literature review of these topics.

1. The needs and goals of school-university collaboration in professional development schools stem from a number of reasons:

(a) *Teachers' and student teachers' dissatisfaction* with teacher education programs is a common phenomenon. One major criticism concerns an over-emphasis on theories at the expense of practicum. Teaching skills and practical knowledge are thought to be more valuable, but teacher education programs do not fulfill students' expectations in this respect (Miklos, Green, and Conklin, 1987, p. 143; Kremer-Hayon, 1994). Furthermore, the socialization power of the university is weak compared to the competing norms of the schools (Lacey, 1977), and university effects are often "washed out" (Zeichner and Tabachnik, 1981). This situation is well illustrated by the metaphor of "oil and water", namely, after the initial shake, the mix returns to its original state.

(b) *The increasing pedagogical knowledge* and the varied social and educational contexts combine to call for educational changes and innovations. New visions of teaching and learning, however, are not easily accepted in schools. Teachers very often resist change and innovation. A high level of expertise is needed in order to overcome this resistance. University faculty members may offer much help in this matter by

developing a new institution, in which the best of theory, research, and experience are integrated and put into practice so as to develop a knowledge base for teaching and teacher education. How these entities may be combined in a shared perspective is a question with which theorists and practitioners alike struggle.

2. Initiation and implementation processes

A major problem arising at the stages of initiation and implementation concerns the issue of a "top-down" or "bottom-up" approach, namely: other factors being equal, which project has the potential to be more successful, the one that is initiated and directed by educational authorities – superintendents, supervisors, change agents – or the one that is initiated and led by in-school personnel? I have not found any study in which the "top-down" approach is recommended, on the contrary: the "bottom-up"a direction is strongly advocated (Guskey, 1986; McLaughlin, 1990). Typical is Stoddart's claim (1993, p. 11) that "by imposing a university research paradigm on public school teachers we may lose the main benefit of collaboration – the combination of different forms of expertise and different perspectives."

The reports on projects of professional development schools host a large number of activities. Clift et. al. (1990), for example, implemented a school-university collaboration that focused on action-research and found it to be an effective tool for professional development. Another project consisted of lectures on constructivism, followed by readings on this topic and analyses of video-tapes at the school-site. Though the attending teachers were given credit towards their degree, their evaluations of this project were not high. They thought the project irrelevant and the "bottom-up" approach time-consuming. For their part, university faculty members focused on scholarly productivity and dissemination (Stoddart, 1993). The author of the report concluded that there was need for more differentiation of needs and roles, more

reflections on discussions, and more practice. Nonetheless, two important elements of the project involved its in-classroom locus and the in-depth analyses that focused on a wide range of perspectives.

Implementation processes are often fraught with periods of difficulties, tension, and frustration on the part of both teachers and university facilitators. Berkey et. al. (1990) termed these periods "screaming periods" in which teachers want to withdraw from school-university projects. Such periods, however, are natural in the process of preparing the arena for a gradual evolution of pedagogical knowledge and extinction of dichotomies in expertise.

Finally, the implementation of programs has been classified in terms of intensity, as follows: cooperative collaboration, characterized by individual, short-term contacts and little reciprocation; symbiotic collaboration, characterized by reciprocity; and organic collaboration, characterized by mutual concerns and interests and by joint solutions (Whitford, Schlechty and Shelor, 1987).

In describing sequence of implementation, Kagan (1991) identified several stages at which collaboration in professional development schools occur:

Formation – The stage of awareness of problems, discussion of ideas, recruitment of members.

Conceptualization – The stage at which missions and objectives are identified, and roles and responsibilities are determined.

Development – The stage of vision and a move from theory to practice, when a system of communication is established and specific restructuring activities are identified.

Implementation – The critical stage at which plans are realized and work is carried out to achieve agreed- upon goals.

Evaluation and termination / reformation close the circle, only to open another one for further renewal.

These stages are interrelated and can occur concurrently.

3. Benefits and obstacles

Inherent in professional development schools aided by university collaboration is the potential development of teacher pedagogical knowledge supported by sound rationales. Teachers can benefit from professors' input and feedback, in addition to receiving up-to-date information from the relevant literature (an important element in every profession). All in all they develop a view of teaching as a collaborative effort. Indeed, school-university collaboration in professional development schools has proved to be a powerful tool for improving teacher skills, for intra-school communication, for striving toward shared goals, and for minimizing change difficulties (Hord, 1986; Fox and Faver, 1984).

University professors, at the same time, also can benefit from this collaboration by increasing the relevance of their research as a result of the teachers' input and by receiving a "living laboratory" for trying out new ideas. Also, the collaboration alleviates some of the stress that university staff often encounter as a result of their academic isolation.

In my own experience, I have witnessed the benefits that student teachers draw from being assigned to professional development schools. By becoming an integral part of the *whole* school, by witnessing efforts at change and improvement, and by participating in extra-curricular activities, they enhance their socialization to the profession.

Along with potential benefits, there are some barriers, one of which is a cultural gap between university and school that may be too large to allow for intensive collaboration. Conflicting goals, different "language" and interests, different cultures, different types of

expertise, and different organizational conditions and reward structures all get in the way. Because partnership represents an instance of cultural interaction and transformation, differing cultural perspectives hinder change and the breaking down of barriers, of internalized values and beliefs (Case, Norlander, and Reagan, 1993). Moreover, while universities represent the wisdom of theory, schools represent the wisdom of practice, and often the university's emphasis on research and publication discourages faculty involvement in collaborative initiatives.

Zeichner (1992) analyzed some of the obstacles to school improvement from another angle. Accordingly, among the obstacles is the ways in which terms of reflection are understood, the replication of practices suggested in research studies while neglecting expertise embedded in one's own experience, the attention paid to technical questions at the expense of values, and the ignoring of social and institutional contexts and reflecting individually rather than collegially.

Still other obstacles include lack of funding and of administrative support. For instance, Smith (1992), who reported on 38 collaborative programs carried out between 1977-1989, wanted to find out which of them still existed in 1992. He found that the reasons for termination of programs included loss of funding, of key personnel, and of administrative support.

The foregoing literature review serves as a background and prologue to the project described in the next sections.

B. SCHOOL-UNIVERSITY COLLABORATION IN AN ISRAELI CONTEXT

The next paragraphs present a case study of a multi-purpose project in an Israeli milieu. It concerns school-university collaboration in a number of professional development schools. The project lasted four years (1989 – 1993), and has been reported in-depth elsewhere (Kremer-Hayon, 1994). While describing elements which are probably common to any other project, the paper focuses mainly on idiosyncratic features and implications of the project, and on emergent problems of interest to school-university collaborators.

The scene

As a result of a general feeling of dissatisfaction with pupils' academic achievements, a decision was made in the Ministry of Education to administer nation-wide achievement tests in reading comprehension, mathematics, and English in all elementary schools. In spite of the strong opposition of the Teachers' Union and after much debate, this program was put into effect, funded by the Office of the Chief Scientist in the Ministry.

The test results came as a great surprise to many schools where both principal and teachers were unaware of the low academic achievements of their pupils. Having lost some of their confidence, a large number of schools that previously resented outside help now became more willing to accept it. Consequently, I was approached by the Haifa district superintendent and the Chief Scientist to plan and implement a school development project via school-university collaboration. This was a clear "top-down" initiation.

Initial deliberations and negotiations

One of the first questions raised was, which schools to include in the project and how to approach them. Having deliberated on these questions, it was decided to include schools of

varying sizes, secular and religious and with a low as well as a high socio-economic status population. The rationale for including such a heterogeneous group of schools rested on several assumptions: schools of all levels need improvement; the inclusion of only low-status schools would reinforce and perpetuate their low self-esteem and low expectations of their pupils. The inclusion of schools of high socio-economic level was expected to impact favorably on the self-esteem and expectations of pupil population in other schools. Finally, it was our intention to learn about the benefits, obstacles, processes, and features of professional development as they occur in different types of schools.

As for the selection of particular schools to be included in the project, the district superintendent's help proved to be very effective. He initiated discussions with school principals on the need to raise pupils' academic achievements and organized a conference at which the project head provided initial information about the nature of the planned project. At that time the plan was only tentative, as its more specific features were expected to emerge in the interaction with the teachers. It was made clear, however, that participation in the project would require time and energy. The school principals were asked to share this information with the teachers. Only schools in which at least 80% of the teachers expressed an interest in joining the project were invited to do so. The reason for this procedure lay in the belief that any school staff is more than a group of individual teachers and that teacher interaction, mutual support and reinforcement constitute necessary elements in the attempt at educational change. Professional development represents such a change. Moreover, in the belief that success is the best motivator for teachers to carry on with their professional development endeavors, we tried to avoid failures that would potentially discourage the enthusiastic and encourage the skeptical.

The final list of participants consisted of ten elementary schools of various types, with a total of 120 teachers teaching about 3,000 pupils, and a group of university affiliates who acted as facilitators as well as several M.A. and Ph.D. students, all with supervision experience.

Implementation: Commonalities and idiosyncracies

Although it is difficult to make a clear-cut distinction between features of the project that are common to most school-university collaborations and those that were more characteristic of the Israeli one under study – and to some extent it is even artificial to do so – I shall make the endeavor in order to emphasize the idiosyncracies of this particular project. In addition, activities that can be incorporated in future collaborations will be suggested. Following is a list of the idiosyncratic features, each of which will be discussed in detail:

- Focus on pupils;
- Professional development: (a) content (b) procedure (c) logistics and location;
- School principals' workshops;
- Built-in program for the perpetuation and continuation of professional development if and when the university facilitators leave the scene;
- Special use of documentation;
- Criteria for project evaluation.

Pupil-focused planning

The project *focus* being on pupils' academic achievements relieved the teachers from a feeling of uneasiness. It appeared that for some teachers, the general need to improve teaching meant that they were not good enough. By focusing on the achievement of pupils and turning

the light upon them – so the teachers said in the course of interviews – they felt less threatened. Teacher professional development was therefore regarded as a means of raising the level of academic achievement rather than an end in itself.

Another reason for stressing this focus was that academic achievements were relatively easy to assess, thus providing teachers with feedback that would empirically point to specific strengths and weaknesses. Based on our experience, we expected that though our focus was on academic achievement, a plethora of additional aspects needing attention would emerge, which indeed was the case.

Professional development

(a) The content

In consequence of the diagnosis of the pupils' achievements in mathematics and reading comprehension, it became clear that most teachers did not have sufficient pedagogical knowledge in the area of assessing pupil achievement. This was the first need of which teachers had to become aware. Accordingly, several workshops led by the university facilitators were assigned to this topic. The workshops enabled participants to experience the construction of classroom achievement tests and ways of interpreting the results. At this time, a university expert in this topic was invited to participate and contribute the necessary theoretical knowledge.

Another salient phenomenon that emerged from the test results was the large extent of heterogeneity. The teachers themselves, recognizing their major need, asked that workshops revolve around the topic of teaching heterogeneous classes effectively, so as to satisfy individual needs and differing intellectual levels.

Interestingly, although the project was initiated by a "top-down" procedure, the specific needs and decisions regarding content and processes once it started were arrived at through a "bottom-up" procedure.

Based on a literature review and on the facilitators' and the teachers' experience, a teaching strategy that had already been put into practice in a previous professional development school project was adopted with a number of adaptations to suit the varying paces of the pupils' progress and teachers' tastes. The proposed strategy thus developed in an action-research manner. Figure 1 illustrates the form this strategy took toward the end of the project.

Insert figure 1 about here

An in-depth discussion of this teaching strategy is beyond the scope of this study; hence, only its main characteristics will be mentioned. These are the following: diagnostic, formative, and summative evaluation; the integration of a variety and wide range of teaching methods, including teaching for mastery, pupil-initiated and independent study, with relevant teaching and learning skills, and various types of classroom organization that allowed for group, individual and whole class study. The various elements of the strategy were analyzed and adapted to suit the goals of the project, and constituted the workshop program.

(b) Procedure, location, and logistics

The program revolved around two axes:

(1) Lectures held at the university site and delivered by university staff to all the project participants. Each lecture was followed by small group workshops on the lecture content.

(2) Regular weekly workshops conducted at the *school site during regular school hours* were an innovative aspect of the project. The principals arranged for groups of teachers to be released from their teaching duties for two hours, during which time the workshop took place. Upon returning to their classrooms, the teachers could immediately try out ideas and teaching skills suggested in the workshop. They did this sometimes by themselves, sometimes in the presence of their colleagues, and at other times in the presence of the group facilitator, depending upon the situation and the teacher's own choice. The immediate feedback received from the members of the group and from the facilitator, which are in line with learning theories, proved to be helpful and effective. A common remark made by teachers that "this is good in theory but it won't work in my classroom" became less common, as ideas were put empirically to the test. Such remarks do not necessarily reflect a negative attitude or the lack of motivation, but rather a lack of knowledge or skills, which can be overcome once teachers are guided and helped.

(c) Individual, peer, and group supervision - In accordance with practical and theoretical knowledge on change, we – the university facilitators – perceived classroom observation as a necessary condition for improvement. We were aware of possible gaps between attitudes expressed in the workshops and actual classroom behavior: without observation, however, there was no way of knowing what happened behind the classroom door. Therefore, we encouraged teachers to initiate peer and university collaborators' classroom observation and supervision. In the beginning, there was some resistance as teachers were reluctant to be observed by their peers or by university facilitators. In time the

resistance faded away, gradually replaced by the development of trust, inter-visitation and open classes. Problems which emerged in the workshops were discussed and suggestions for solving them were then put into practice by one or two teachers. The observers were in some cases the workshop participants, and in other cases only a colleague or a university facilitator. The unit of observation was, for the most part, a whole lesson. However, in some cases it lasted 15 minutes only, in which a specific teaching skill was demonstrated. In the latter event, the observations were immediately followed up by workshop discussions and supervision. When teachers had specific interests, needs, or requests, the university facilitators provided individual supervision. Each teacher documented the discussion and supervision related to his or her teaching for further comparison and reflection.

Principals' workshops

The principals' support and involvement were considered crucial elements in the implementation of the project. Since we knew from experience that success or failure would depend upon them to a great degree, they were given special attention and consideration.

Following our early discussions with the principals in which we made them aware of our belief, so as to engender in them a sense of accountability, several principals approached us to ask for regular meetings. These meetings were held once a month and soon turned into workshops carried out on a regular basis. The topics of deliberations were decided upon by the principals themselves, they ranged from the narrow problem of how to support teachers in their endeavors, encourage them, and trigger their motivation to develop professionally, toward a wider perspective, such as school organizational climate, effective school administration, and effective use of time. Each workshop began with the principals' report on the extent to which they could apply the knowledge they had acquired in the previous

workshop, as well as on problems they had encountered. Colleagues acted as a support group and thus, as one principal remarked, a by-product of the meetings was the alleviation of feelings of isolation that school principals often experience.

An additional product of the workshop was the development of an evaluation form that the principals used to evaluate themselves in the realm of time management and role implementation. The deliberations that preceded the phrasing of the items to be included in the form constituted an important aspect of the principals' professional development.

An unforeseen but important outcome concerned the changes that were made in the content and form of pupils' report cards. Interestingly, the need for this change emerged simultaneously in the teachers' and the principals' workshops, evidently as a natural result of the new teaching strategy that was put into practice and that then created a chain reaction. As previously mentioned, the main goal of the project as a whole was to improve teaching in heterogeneous classroom situations. Consequently, the proposed teaching strategy allowed for individual differences to emerge, resulting in differing learning materials and levels of depth for each topic of study. It then became unreasonable to evaluate all pupils by the same criteria. A revised version of the report cards was needed, and this became a challenge for the principals', teachers', and master teachers' (these will be related to later) workshops alike. New report cards were, then, another product of the workshops. Details and description of the process and the were reported elsewhere (Kremer-Hayon, 1993).

In sum, the principals' workshops proved to be beneficial not only in the support of teachers', but also for the principals' professional development, both aspects fulfilling the goals of PDS.

Planning for perpetuation and continuation

This specific project of professional development schools through school-university collaboration was planned for three years – which seems to be the minimal amount of time that allows for any change to occur. Hence, already at the onset, we were concerned with the problem of change perpetuation and continuation after the project people leave the scene. A review of the literature on change perpetuation yielded a rather pessimistic picture in this regard (Eastwood and Seashore, 1992; Jansen, 1991).

Aware that any changes we hoped to introduce could be washed out relatively quickly, and not willing to take this risk, we planned to identify a group of teachers who would likely continue PDS activities in the future. Toward the end of the first year and with the principals' input, we identified one-three such teachers in each school, depending on school size. These were teachers whom we considered to be potentially good educational leaders, whose high level of teaching and good interpersonal relationships held some promise that they would succeed in continuing the PDS program. These teachers formed a third group who participated in workshops specifically designed to prepare them for their future task. The topics of these workshops included change facilitation, leading group discussions, classroom observation, supervision of instruction. At the beginning of the third year, in parallel with their participation in the workshops and with the project supervisors' help and feedback, these teachers started to plan and implement workshops. Those who became independent thus freed the university facilitators from working with a number of teachers, who for some reason were interested in working on an individual basis.

The preparation of these teachers to become workshop and educational leaders was another contribution to the educational system. It was also our intention to have these teachers disseminate the project ideas to other schools, but for some reason this plan did not receive the support in the superintendent's office.

Documentation

All project activities were documented: interviews were audio-taped and transcribed by a research assistant, and workshops were protocolled, in most cases verbatim. The documentation served several purposes. One purpose was to provide material for reflection: Since most workshops started with a brief revision of the previous protocol, teachers began thinking in retrospect about their suggestions, ideas, opinions, and attitudes, which widened their perspectives, and even led them to change their minds.

Reviewing the protocols proved to be a helpful procedure in creating continuity, elaborating on the topics of the previous workshop possible, in providing teachers with the opportunity to report to the group successes and failures in implementing ideas that had been suggested and particularly in receiving feedback.

The interview protocols were open only to the interviewees, who together with the project facilitators went through processes of stimulated recall, which helped in clarifying and shedding light on thoughts and in broadening the perspective of their pedagogical knowledge. Several teachers asked to reread the protocols after a year and found this procedure helpful in identifying changes that had occurred in their pedagogical perceptions. As they later reported, it constituted an important element in their professional development.

Learning materials of special interest were also collected and assembled in folders, accompanied by teachers' remarks and suggestions regarding various ways of using these materials. The university facilitators added their input to these folders. These folders had the added advantage of saving the teachers time. Because of development of a plethora of materials developed to suit the individual levels of pupils, teachers could save some of their

energy by using the already developed materials. The process of intra- and inter-school exchange, furthermore was a natural outcome of the "folder procedure."

Project Evaluation

Based on the experience gained in the course of implementing the project, this section describes sources of data and recommends ways of evaluation that proved to be helpful. The evaluation of the project itself has been reported elsewhere (Kremer-Hayon, 1994).

The topics and processes of evaluation were determined before, during, and after each stage. They evolved in an action research manner and included three principal aspects:

(a) The nature of school-university collaboration

This aspect involved outcomes in terms of mutual trust, confidence, support, collegiality, open lines of communication, commitment, willingness to take risk on the one hand, as well as in terms of enrichment of university staff with insights into school practices, and practitioners with innovative teaching modes and systematic feedback.

The data for the evaluation of this aspect of the project was received through interviews and discussions with both parties, on both an individual and group basis. A major part of the group discussions centered on comparisons of the protocols on the various types of interactions between the two parties at various points in time. These comparisons pointed to changes that occurred over time in the style of the interactions, to the extent to which cultural gaps had been bridged, and to change in the participants' attitudes.

(b) The professional development of the project participants

The extent to which the goals of the professional development schools goals were achieved was evaluated from several points of view: One concerned the teachers' professional development, the criteria here being decided upon jointly by the teachers and the university

facilitators in a collaborative manner. The evaluation criteria were modified in the course of the project to suit emerging topics and needs. They included group as well as individual growth, both evaluated with the aid of questionnaires, protocols on group discussions, and interviews. These data were obtained in the early and later parts of each year and analyzed to disclose changes that might have occurred in the direction of the project's goals.

The extent of cohesion, collaboration, support, mutual help, provision of constructive feedback, and the professional level reflected in the discussions also constituted criteria to evaluate group growth. The extent to which teachers implemented the proposed teaching strategy was received through teachers' self-reports, observation of teaching by colleagues and university facilitators, and the quality of the learning materials that had been developed.

The evaluation of individual teachers varied according to special interests and needs. In addition, a randomly selected number of teachers were observed several times, the protocols of their lessons were analyzed by the teachers themselves with the aid of the university facilitators. Taken over time, the protocols supplied data for an evaluation of professional growth. With the teachers' agreement, the protocols served as useful materials for the group workshops.

Lastly, an evaluation of the school principals' professional growth constituted an additional element of the overall evaluation. Interestingly, the principals' evaluation focused on the materials that were developed in the workshops: the forms to assess the organizational climate of the school, and the effective use of time.

(c) Pupils' academic achievement

The rationale for including pupils' academic achievements as an integral part of the project evaluation lay in the fact that although school-university collaboration is an important value in itself, it may not be sufficient to achieve educational goals in relation to

pupils. Moreover, the pupils' achievement served not only as an end in itself, but also as a vehicle for fostering school-university collaboration and professional development. Moreover, since pupils' achievements provided empirical evidence of the effectiveness of the program, they helped in turn, to raise the motivation of both parties to continue with their endeavors.

In view of this line of thought, one of the project's first activities was the administration of achievement tests in mathematics, reading comprehension, and a number of thinking skills. At the end of each semester, parallel tests were administered to each class in the participating schools as well as to a number of classes that had been selected to serve as a control group. This procedure of evaluation served several goals: It provided teachers with feedback regarding their teaching effectiveness in general; with information regarding the level of each pupil' as a basis for adapting teaching methods and learning materials to suit individual needs and thus to put the proposed teaching strategy into practice; with the opportunity to construct classroom achievement tests in a systematic manner, to analyze the results, and to draw conclusions; and last the results with which to make comparisons over time both within and among the participating schools and with the control schools. This last evaluation provided additional evidence, indeed the only measurable one, of one of the project's goal achievement.

FINAL REMARKS

One way of summarizing this multi-purpose project is to place its concepts in an interaction model, described in Figure 2.

Insert here Figure 2

The arrows in this model point to the interaction between its elements. The model may be viewed in more than one way. As far as this project is concerned, it describes the sequence of deliberations, starting with the call for accountability, which was the project's point of departure and which in turn directed its focus towards the pupil achievements. In order to raise the level of pupil achievement, a high professional level of school functioning is required, which was expected to be achieved in professional development schools through school-university collaboration. The next step in the sequence was the evaluation of the pupils' achievements, of the professional development activities, and of the nature and intensity of the school-university collaboration. The interactive nature of these three elements pointed to the extent to which they were congruous with the goals inherent in the demands for accountability. This sequence of steps, however, is not linear ending at the stage of evaluation, but is cyclical, manifesting a continuous endeavor to raise achievement.

The model also provides guidelines for a sequence of diagnostic activities. If the results at the evaluation stage are found to be unsatisfactory, the cause may well be identified by going back and systematically analyzing in turn each of the different elements of the model. Causes of failure can thus be identified.

The model elements can be approached through and followed in different tracks of deliberation. For instance, another cycle of questions may follow a line of inquiry, including: What is the level of pupil achievements? Is it congruent with societal demands? To the extent that it is not, how can a school improve itself? How can a school-university collaboration be of help toward this end?

* * *

This case study will not be complete without pointing to the lessons that we have learned and that we suggest as topics of consideration in planning and implementing similar projects in the future.

a) The "top-down" vs. "bottom-up" approach

Although the literature on this topic strongly recommends the latter, a view with which I too completely agree, I still suggest that the decision on which approach to employ be based on the specific features of each school. In this project, it appeared that the schools differed: not all the teachers were ready for a "bottom-up" approach, nevertheless, a "top-down" approach would not be accepted, in some schools. Such situations generates a dilemma: If we accept pupils' individual and cultural differences and teach our students and teachers to respect them, what right do we have to behave differently? If we agree that teaching methods should be adapted to suit different learning styles, why should we not adapt our approach to accord with the school's approach? Moreover, if our view of "bottom-up" – "top-down" controversy does not harmonize with that of the school, it is ethical to impose our own approach?This dilemma, however, may be mitigated by the presence of empirical evidence showing that one approach is indeed better than the other. It may also be argued that it is the university facilitators' role to help schools change their approach. In the latter case facilitators must then consider the cost of time involved in attitudinal change.

(b) Back and forth movement

This refers to the phenomenon that after periods of growth there is often some regression. Actually, the process as a whole is fraught with fluctuations, advances and retreats. Fluctuations, which are inherent in growth processes, may result from the time

needed for accommodation, assimilation, and internalization, as well as from an immunity to change and the anxiety this raises. Points of retreat are crucial, as teachers and facilitators tend to give up at those times. Once, however, fluctuations are accepted with patience and understanding, a pathway opens up to increased energy and renewal.

(c) Time element

Change takes a long time to occur. It involves slow, uneven progress, and it varies according to differences in schools and individuals. Therefore, time-table of projects should well be planned in a flexible manner so that unforeseen events do not obstruct implementation and both the school staff and the facilitators do not become disappointed from not being "on time".

(d) Clarity

Clearly stated goals constitute a necessary condition for success. Ambiguity of goals may lead to confusion and impede processes of change. Certainly, goals may change in the process of implementation in consequence of emerging needs. This is especially true in an action research context. In such cases, a change of goals must be decided upon in collaboration with all the parties involved because collaboration is likely to create more commitment, besides its being an important element in teachers' professional development. In addition, the meanings attached to concepts must be brought into the open, to be examined and shared. Jargon is unnecessary; the researcher must speak the language of teachers.

(e) Documentation

This proved to be a very useful tool, serving a number of purposes. In the area of individuals' professional development the protocols of the observed lessons and the ensuing discussions provided teachers with data for reflection, for comparing past with present

teaching in order to disclose any changes for the better, or otherwise. Reflection shared with colleagues and with university facilitators also benefited the teachers' professional development. Teachers' journals and logs, used to reflect , through their own stimulated recall, on their teaching activities and perceptions, can offer the same advantages. Additionally, they can be used for purposes of self-evaluation.

Protocols of the interviews with the schools' staff and of the workshops at various points in time, also provided data for revealing attitudinal changes, interpersonal relations, and various undercurrents, all of which proved very helpful in guiding facilitators' interaction with school personnel.

The learning materials that were developed were assembled in special folders, for which one teacher in each school was responsible. In many cases teachers added remarks and suggestions based upon their own experience so that a network of communication spontaneously developed in each school and among schools. This procedure is strongly suggested.

(f) Miscellaneous

– Satisfactory and observable results constitute important elements for motivating continuing efforts. Continual dissatisfaction, if not discussed, analyzed, and followed by constructive suggestions, may lead to frustration and distrust and so impede the whole project.

– Meta-communication, that is, communication about communication, is a helpful vehicle for the diagnosis and improvement of communication.

– An action-research orientation, characterized by critical reflection, experimentation with evaluative feedback, and direct links to recent educational theories and research methods – through the presence of university facilitators – may prove a most effective tool

for the professional development of the school as a whole and of the individuals in it. By encouraging modification with regard to different and emerging needs, by updating of curriculum, and incorporating timely new ideas, chances are good that the school will develop *a culture of inquiry.*

In sum, the case study presented in this paper and the lesson emanating from it add a small brick to the huge edifice of the developing knowledge about school-university collaboration in professional development schools.

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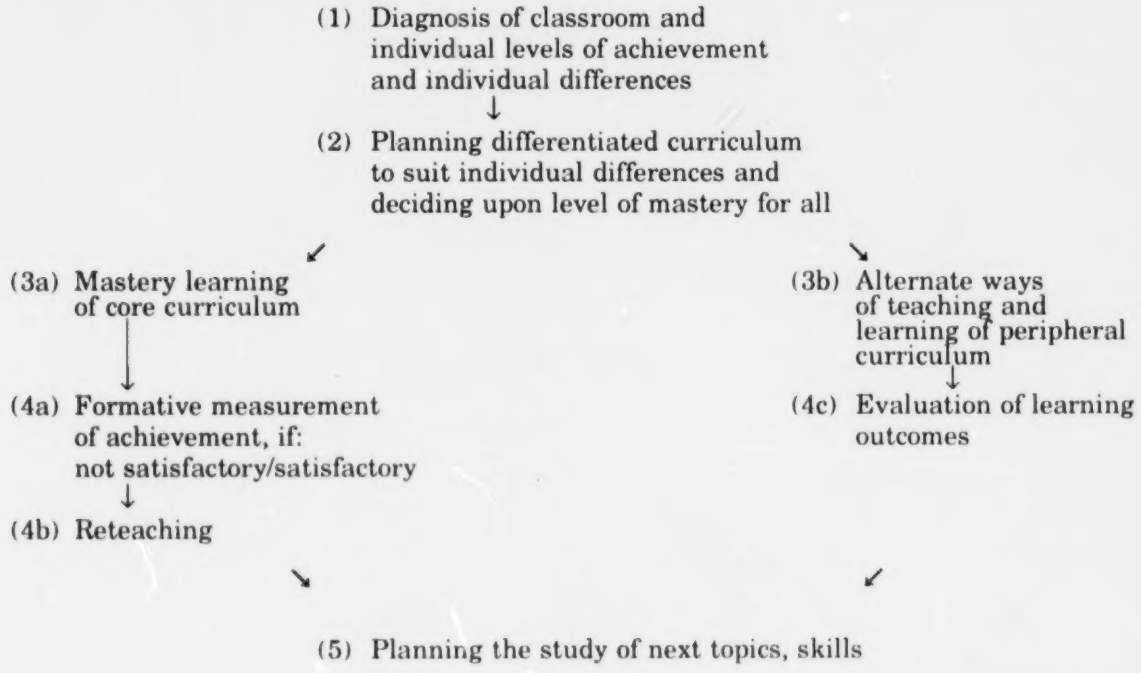
(1) Diagnosis of classroom and individual levels of achievement and individual differences
(2) Planning differentiated curriculum to suit individual differences and deciding upon level of mastery for all
(3a) Mastery learning of core curriculum
(3b) Alternate ways of teaching and learning of peripheral curriculum
(4a) Formative measurement of achievement, if: not satisfactory/satisfactory
(4b) Reteaching
(4c) Evaluation of learning outcomes
(5) Planning the study of next topics, skills

Figure 1. Flow chart of teaching-learning activities.

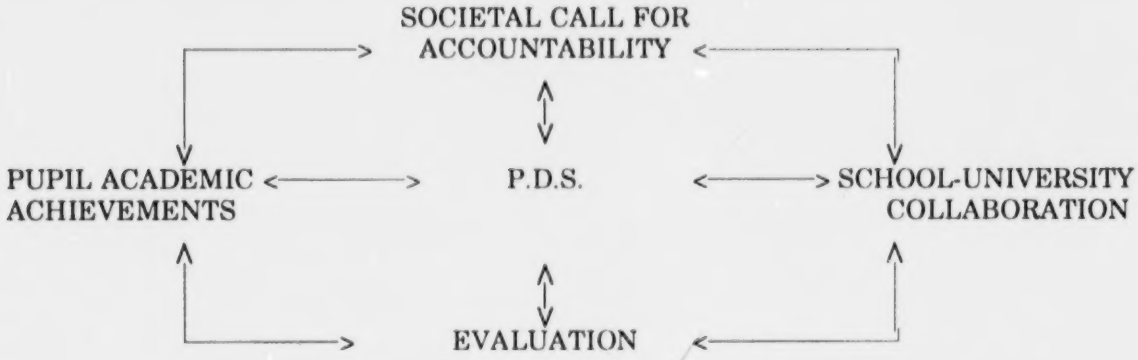

Figure 2 – An interactive model of the project elements